

above. On the next morning it was learned that serious gorging had occurred in the North branch, beginning at Kipps Run, a short distance above Sunbury, and extending to Berwick, a distance of about twenty-four miles, causing serious damage to towns and low-lying farm lands. At Bloomsburg the ice was piled higher than the bridge on the west bank of the river, some reports giving the height as 40 feet, and a considerable part of the town was submerged. The bridge at Bloomsburg had three spans lifted up by the ice, and the first span was moved about eighteen inches down the stream. The girders of one span went out on top of the ice, together with some of the planking. The bridge has been repaired temporarily and was open for traffic on February 3, enough of the iron work to repair one side having been recovered. The highest water at Bloomsburg was 31 feet, or 2 feet above the danger line, from January 24 to 26, inclusive; it had receded to 20 feet on January 31.

At Catawissa the water registered 30 feet, or 6 inches higher than in 1865 and 3 feet above the flood of March 2, 1902. Catawissa, Bloomsburg, Espy, Rupert, and Danville were isolated from each other and from the outside world for several days, all roads being covered with ice and water. The railroad tracks were also covered with ice and water for miles north and south of Catawissa, stopping all traffic; traction service between Catawissa and Berwick was suspended for several days on account of washouts. The ice settled about 5 feet at Catawissa on January 25 and 26. At other towns in the gorged district the conditions were similar to those described at Bloomsburg and Catawissa. The loss up to January 26 was estimated by citizens in the locality at \$350,000. With the exception of the settling of the ice, and the lower water, as mentioned above, the gorge remains about the same as when first formed.

Outside of the territory affected by this gorge, the only place reporting a danger stage was Wilkesbarre, where the water rose to 20.5 feet at 6 p. m., January 23, or 3.5 feet above the danger line, remaining at that height about one hour, but doing no material damage to property. Gorges were reported at a few other points, one being at Long Level, a few miles below Wrightsville, in the lower reach of the Susquehanna, but no serious damage has thus far resulted from the smaller gorges. An ice jam caused by the accumulation of ice from the river and the Sheshequin Creek, wrecked the iron county bridge at Ulster, in Bradford County, about 10 miles above Towanda. One pier in the middle of the

stream went out about 8:30 a. m. on January 23, taking two spans into the river; about two hours later the pier on the Sheshequin side fell partly over, allowing one end of the third span to drop. This bridge was built by the county in 1889 at a cost of \$38,800. It consisted of four spans of 234½ feet each.

The heavy blanket of snow covering the ground at the time the storm commenced absorbed a large amount of the rain which fell over the watershed of the river on January 21 and 22, and while the depth of snow was greatly diminished by the rain and high temperature, it is estimated that less than one-half of the water in the basin passed down with the flood, being held at first by the snow and later by the fall in temperature which checked the run-off. Reports at the close of January indicate that the depth of snow in the mountains of both the North and West branches was about eighteen inches and as this is probably mostly snow saturated with water and frozen solid, the amount of water that would be released by a sudden thaw would be sufficient to cause a flood equal to one that would ordinarily result from an average of from 2.50 to 3.00 inches of rainfall over the upper watershed.

There is nothing further of special interest to be recorded. There was a moderate rise in the Altamaha system, caused by the heavy rains of January 22. Ample notice was given of this rise, which proved very beneficial to the United States Engineers, rice planters, and lumbermen, who had been anxiously awaiting moderately high water.

The highest and lowest water, mean stage, and monthly range at 199 river stations are given in Table VII. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock on the Arkansas; and Shreveport, on the Red.—*H. C. Frankenfield, District Forecaster.*

CLIMATE AND CROP SERVICE.

By Mr. JAMES BERRY, Chief of Climate and Crop Service Division.

The following summaries relating to the general weather and crop conditions during January are furnished by the directors of the respective sections of the Climate and Crop Service of the Weather Bureau; they are based upon voluntary reports from meteorological observers and crop correspondents, of whom there are about 3000 and 14,000, respectively:

Alabama.—No extremely low temperatures or excessive precipitation occurred, but frequent moderately cold spells retarded fall sown wheat and oats; some sown in December had not germinated. Frequent rains kept ground generally too wet for work, though some land was prepared for next season's staple crops; more oats to be sown. Destructive wind-storm in Hale County on 22d; heavy snow in north-central counties on 28th.—*F. P. Chaffee.*

Arizona.—Temperatures were generally below normal, and droughty conditions prevailed most of the month. The drought was partly relieved by snowfall in the northern portion of Gila County and in a few other localities, but the situation had become very serious over most of the Territory. Plowing and seeding were retarded by dry, cold weather. Fall sown grain was not growing well; much of it had failed to germinate. Range feed was fairly plentiful, but stock water was scarce. Stock were deteriorating.—*M. E. Blystone.*

Arkansas.—The first and second decades were mild and pleasant; A general heavy rain, turning to snow, occurred on the 21st and 22d, and was followed by continued cold weather until the end of the month. Considerable progress was made in preparing the ground for spring crops. Small grain did fairly well. Very little cotton remained in the fields. Stock were generally thrifty. Fruit was not injured to any considerable extent by the cold weather.—*Edward B. Richards.*

California.—Temperature and rainfall were below normal and crop growth was slow. The low temperature was beneficial, however, to the deciduous fruit interests, as it prevented the too early development of bloom. Severe frosts were frequent, but caused no material injury to oranges or young nursery stock. In the central and northern sections grain and grass were in good condition and large crops are expected. The drought continues in southern California and crop prospects are discouraging.—*Alexander G. McAdee.*

Colorado.—Continued mild weather was favorable to stock, which were in good to fine condition, except over portions of the eastern foot-hills region, and in localities in the Arkansas Valley and eastern counties, where poor ranges and a scarcity of water prevailed. The dryness caused some deterioration in winter grain, previously reported deficient. Snowfall was also deficient during January; precipitation, especially on the eastern and southern watersheds, scarcely made good the loss by evaporation, and the amount of moisture stored for late irrigation is the least

in many years; fortunately there is still time for sufficient snowfall to insure water for irrigation during the early part of the season. The prevailing dryness of the ground will lessen the early run-off.—*F. H. Braulenburg.*

Florida.—The month was colder than the normal, with an excess of precipitation over a large portion of the State, the deficiency being in the southern section. As a rule the soil was too cold for a satisfactory growth of vegetables, which were much retarded. Frosts were numerous and, in some instances, damaging to vegetables south to Dade County. General farm work was advanced, much plowing for corn being accomplished. Citrus trees were in good condition.—*A. J. Mitchell.*

Georgia.—The temperature was decidedly below the normal, the weather being steadily cold throughout the greater portion of the month, but not severe. The precipitation was below the normal, except in the southern section. An unusually heavy snowstorm occurred in the north on the 28th, the amounts ranging from 6 to 12 inches. Land was in good condition at the close of the month; wheat backward; oats poor. Preparatory work for new crops was well advanced in some sections.—*J. B. Marbury.*

Idaho.—Temperature in eastern and southern districts generally below normal; elsewhere, above. Precipitation deficient in nearly all sections, though more of the range was snow-covered than during December, resulting in poor condition of range stock in localities; condition of domestic stock good.—*E. L. Wells.*

Illinois.—Wheat and rye in the central and northern districts were in a normal midwinter condition. In the principal wheat growing section, the southern district, the crop was very uneven. During the cold wave the fields were generally well covered with snow in all districts. Pastures and meadows had been well protected during the season, and were generally promising.—*Wm. G. Burns.*

Indiana.—The month was unusually cold, but the ground was covered with snow in the northern and greater portion of the central section, so that wheat did not suffer, except from inundation on bottom lands, caused by rain and melting snow during the 19th–22d, and also possibly on flat land by a coating of ice that formed about the 23d. Adverse conditions prevailed during the planting season for wheat in the southern section and a few southeastern counties of the central section.—*W. T. Blythe.*

Iowa.—Month colder than usual, with slight excess of precipitation. First and second decades were favorable for stock feeding and usual farm operations. Severe storm of sleet and ice about 20th, followed by extremely low temperature, caused considerable damage to fruit trees, vines, timber, and telephone lines; also caused much inconvenience to stock feeders and some damage to fall grain, though the fields were covered with snow during period of lowest temperature.—*John R. Sage.*

Kansas.—Wheat was generally in good condition, and though un-

covered during the freezing weather, yet there was very little seriously injured, owing to dryness of ground. There is sufficient vitality, and with favorable weather growth will be resumed. Plowing progressed in the southwest and some barley and oats were sown.—*T. B. Jennings.*

Kentucky.—Temperature and precipitation below normal; snowfall light. Grain and grasses suffered from freezes. Most of the wheat was sown late, and, having made a poor start, scarcely showed on fields at the close of January. Earlier sown somewhat better. Fruit trees appeared to be in good condition. Stock doing well. Farm work backward; too dry and cold to handle tobacco or prepare seed beds.—*S. P. Gresham.*

Louisiana.—Weather conditions proved very favorable for agricultural interests, and preparations for spring planting were pushed vigorously. Seed cane saved for spring planting was found in good condition, and much cane was planted during the month. Fall planted cane was doing well. Winter oats continued to show a good stand. Gardens and strawberries were successfully protected through freezing weather. The orange crop was good.—*I. M. Cline.*

Maryland and Delaware.—The month was remarkable for very low temperatures on the 5th and 6th and for continuous cold, relieved by but one period, of three or four days, with temperatures above normal. Ice in harbors seriously obstructed navigation nearly all the month. Warm rains from the 20th to 24th melted all snow, caused high waters, and exposed wheat and grasses for a week. Wheat showed slight improvement, except in southern districts, where protection was inadequate. No damage to fruit reported, except in Garrett County.—*Oliver L. Fassig.*

Michigan.—Although January was a very cold month, with some severe cold waves, winter wheat was splendidly protected by snow during the entire month. A careful investigation by some correspondents showed wheat to be in fine condition at the close of the month and making good winter growth.—*C. F. Schneider.*

Minnesota.—January was a cold month, with lowest temperatures from the 1st to the 4th and from the 23d to the close. The precipitation was all snow; it fell on many days and covered the ground all month to depths ranging from about 3 inches in the southwestern to 15 or 20 inches in the northeastern portions. It was said that the season had been a very favorable one for work in the lumber regions.—*T. S. Outram.*

Mississippi.—The month was unusually dry, with much sunshine and considerable freezing weather. A severe thunderstorm occurred on the 21st, and a very heavy snow fell over the central and southern portions of the State on the 27th and 28th. The soil was generally in good condition and some plowing was done. Clearing the land, ditching, fencing, and hauling fertilizer were in progress. A small acreage of oats was sown. The scarcity of labor was general.—*W. S. Belden.*

Missouri.—Up to the 25th winter wheat received but little protection from snow, and in many localities was considerably injured by dry freezing and by alternate freezing and thawing, but during the severe cold weather of the last week of the month the crop was fairly well protected in most sections. A large portion of the peach buds were killed by the low temperatures of the 3d, 26th, and 29th.—*A. E. Hackett.*

Montana.—The temperature was very generally above the normal, except in the northeastern part of the State; in the western and southeastern counties the temperature was uniform for the season. In Chouteau and eastern Teton counties the precipitation was quite light, elsewhere it was somewhat above normal; the greater portion occurred during the latter part of the month. On the stock ranges there was but little severe weather, and, generally, stock had wintered thus far with practically no losses.—*Montrose W. Hayes.*

Nebraska.—The first twenty days were warm, with very little snow, leaving the ground practically uncovered. A favorable period for fall work on the farm, but rather unfavorable for winter wheat, although the crop was not materially injured. On the 20th, rain and sleet followed by snow, fell in the southeastern section, and during the last ten days low temperature and cloudy weather with light snow occurred generally in the State. The moisture was beneficial to wheat, but more moisture was needed, especially in central and western counties.—*G. A. Loveland.*

Nevada.—Temperature about normal; precipitation considerably below normal; very dry month, especially over the southern half of the State. Storms during the first half of the month improved range conditions very materially; cattle, horses, and sheep in satisfactory condition generally. Weather unusually clear and bright the last decade of the month.—*J. H. Smith.*

New England.—January was unusually cold throughout the district, and in many localities the coldest for many years. The precipitation, generally snow, was somewhat deficient in northern sections, and normal to heavy in the southern portion of the district. The very low temperature combined with much stormy weather, was unfavorable to outdoor pursuits. It is believed that the peach crop suffered severely from the extreme cold. The deep snow on the ground was favorable to grass and grain.—*J. W. Smith.*

New Jersey.—Intensely cold weather prevailed from the 2d to the 6th, inclusive, during which time the temperature fell to 34° below zero in portions of the northeastern section and to 30° below in the extreme northwestern section. The cold-wave was preceded by snow, affording ample protection to grain and grass. Many peach and plum buds were killed by the severe cold.—*Edward W. McGann.*

New Mexico.—The driest winter thus far for years. Since last Sep-

tember the precipitation had been practically nothing over the plains, excepting in the extreme northwest, and on mountain ranges much less than usual. Streams carried much less water than usual at this season. Range food, although short, was extremely well cured in the fall, and, owing to the absence of severe weather, stock continued in very good condition.—*R. M. Hardinge.*

New York.—January was a cold and stormy month, with much snow and practically no thawing. The weather was generally favorable for grass, wheat, and rye, which were in good condition, being covered with heavy snow in nearly all sections. Reports indicated some damage to peach trees by abnormally low and severe temperatures, the winter thus far having been the coldest for years. The ice harvest was mostly completed by January 31.—*R. G. Allen.*

North Carolina.—January was very cold, with the temperature almost continuously below normal. The precipitation was deficient, but became more abundant and beneficial after the 20th. Winter wheat and oats made almost no growth and were generally in poor condition. Much winter wheat failed to sprout, and evidently perished; winter oats also were badly winter killed. Almost no farm work of any kind was done during the month, except a little plowing for truck crops in the southeast portion.—*C. F. von Herrmann.*

North Dakota.—In the Missouri Valley and slope, where the ground was well covered with snow, feeding of all stock was necessary during the entire month, and as the supply of feed was limited, stock were in only fair condition. While considerable snow fell on the open ranges in the western part of the State, it was so drifted by high winds that stock could still graze and consequently were in fair winter condition.—*B. H. Bronson.*

Ohio.—Wheat was generally well protected by snow except in the extreme southern counties, and, except in that section, it was not injured by cold weather. There were no reports of injury by alternate freezing and thawing. Early sown wheat continued in fair to good condition in most sections. Late sown was fair in the north and poor in the south. The rain and warm weather of the 20th to 22d enabled tobacco growers to prepare their product for market.—*J. Warren Smith.*

Oklahoma and Indian Territories.—Sleet and snow of the 20th to 22d benefited wheat and placed soil in good condition for plowing and seeding; wheat small, but healthy and in fair to good condition, except over the northwestern counties and Indian Territory, where the crop was generally poor; plowing progressed rapidly; stock in good condition and wintering well.—*Charles A. Hyle.*

Oregon.—January was both drier and warmer than usual in all parts of the State. The top soil was well saturated with moisture, and as it was not cold enough to injure fall wheat the plant appeared to be in a thrifty and promising condition everywhere. Some plowing and seeding were done during the month, and the farmers had their winter's work well in hand. Fruit trees so far had wintered well.—*Eduard A. Beale.*

Pennsylvania.—Some damage by washouts and floods resulted from rains of week ending 23d. Otherwise grain was well protected by snow and apparently uninjured to any great extent. At the end of the month some lowlands were covered with ice, which may prove damaging.—*T. F. Townsend.*

Porto Rico.—Weather dry in southern division; elsewhere frequent showers kept land and crops in good condition generally. Sugar making was general and active after first decade; yield fair for the season. Young canes and ratoons doing nicely. Coffee trees were in good condition and had begun to blossom in a few places. The sowing, transplanting, and cutting of tobacco progressed during the month; early crop good. Young plants looked well. Some beans, corn, and sweet potatoes harvested and much land prepared for spring planting. Small crops and fruits generally plentiful. Pasturage became poor.—*E. C. Thompson.*

South Carolina.—The month was cold, with slightly deficient, but evenly distributed precipitation. During the last four days winter grain had snow protection over the western third of the State. December sown wheat came up to thin stands. Some winter oats were sown. Oats were unusually small, though not materially injured by the alternate freezing and thawing. It was too cold for growth of either grain or truck crops. Some plowing was done preparatory to sowing spring oats and planting corn and cotton.—*J. W. Bauer.*

South Dakota.—Except that severe cold prevailed during the third decade, the conditions were not unfavorable. The snowfall was mostly light, but winter rye and also the very limited amount of winter wheat sown were fairly well protected thereby and were considered uninjured, except possibly in some extreme southeastern localities. Range live stock generally withstood the cold weather favorably, and at the end of the month were reported in good winter condition, but the cold necessitated heavier feeding of housed stock than usual.—*S. W. Glenn.*

Tennessee.—Continued low temperature, with deficient precipitation and little or no snow protection until the last week, in addition to almost continuous freezing and slight surface thawing, proved very injurious to winter grains, and prospects were worse than for many years. Where wheat was well planted early with drill, or deeply covered, the plant looked fairly well, but in many places the stands were so poor the land will be plowed up for other crops. Oats were mostly winter killed.—*H. C. Bate.*

Texas.—Sufficient showers fell in the coast region and the eastern por-

In the following table are given, for the various sections of the Climate and Crop Service of the Weather Bureau, the average temperature and rainfall, the stations reporting the highest and lowest temperatures with dates of occurrence, the stations reporting greatest and least monthly precipitation, and other data, as indicated by the several headings.

The mean temperatures for each section, the highest and

lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observation. Of course the number of such records is smaller than the total number of stations.

Summary of temperature and precipitation by sections, January, 1904.

Section.	Temperature—in degrees Fahrenheit.							Precipitation—in inches and hundredths.						
	Section average.	Departure from the normal.	Monthly extremes.				Section average.	Departure from the normal.	Greatest monthly.		Least monthly.			
			Station.	Highest.	Date.	Station.			Lowest.	Date.	Station.	Amount.	Station.	Amount.
Alabama	41.8	-3.2	Flomaton	73	2	Riverton	9	27	4.17	-0.56	Calera	6.40	Decatur	1.90
Arizona	42.4	-2.3	Tombstone	84	14	Fort Defiance	7	26	0.19	-0.82	Fort Apache	0.80	7 stations	0.00
Arkansas	38.9	-1.4	Prescott	75	20	Oregon	5	26	3.82	-0.76	Pond	6.56	Brinkley	2.11
California	45.8	-0.4	El Cajon	88	13	Bodie	14	18	1.38	-2.88	Branscomb	8.61	7 stations	0.00
Colorado	22.9	-1.3	Holly, Blaine	74	18	Gunnison	30	28	0.35	-0.28	Ruby	2.92	4 stations	0.00
Florida	54.9	-2.1	Orange Home	88	22	Molino	20	5.6	5.20	+2.54	Gainesville	11.79	Plant City	1.20
Georgia	41.8	-3.5	St. Marys	76	22	Clayton	4	30	3.91	-0.35	St. Marys	6.92	Waynesboro	0.86
Idaho	24.7	-5.4	Gamet	60	16	Chesterfield	24	23	1.52		Murray	4.39	Gamet	0.12
Illinois	20.8	-5.4	Cairo	61	20	Antioch	25	4.25	2.95	+0.68	La Harpe	5.48	Antioch	0.55
Indiana	21.7	-5.7	Crawfordsville	64	19	Hector, Richmond	26	3	4.15	+1.26	Kokomo	7.26	Crawfordsville	1.61
Iowa	14.0	-4.2	Red Oak	57	19	Elkader, Fayette	32	27	1.18	+0.21	Lacona	3.68	Storm Lake	0.02
Kansas	29.3	-0.4	Medicine Lodge	72	19	Marion	19	26	0.41	-0.30	Pleasanton	2.13	Oberlin	0.90
Kentucky	32.3	-2.4	Jackson	70	22	Fords Ferry	9	27	3.17	-0.73	Blandville	5.16	Lexington	1.92
Louisiana	48.0	-2.8	Melville	80	1	Leesville	10	4	2.92	-1.78	Donaldsonville	4.58	Lake Charles	1.25
Maryland and Delaware	25.5	-5.7	Charlotte Hall, Md.	64	22	Grantsville, Md.	20	5	2.53	-0.60	Bachman's Valley, Md.	4.67	Pocomoke City, Md.	1.07
Michigan	13.0	-7.9	Detroit, Hagar, Birmingham	42	20	Humboldt	41	29	2.06	-0.09	Dundee	5.37	Menominee	0.35
Minnesota	4.5	-4.8	Winnebago City	43	21	Pokegema Falls	57	24	0.39	-0.31	New Ulm, Shakopee	1.00	Pine River Dam	0.08
Mississippi	42.9	-3.3	Magee	79	10	Jackson	3	30	3.16	-2.05	Indianola	5.42	Thornton	1.60
Missouri	27.0	-2.6	Dean, Mt. Vernon, Protom	66	20	Sublett	23	29	2.85	+0.86	Neosho, New Madrid	5.29	Kansas City	0.77
Montana	23.4	+4.6	Billings	58	15	Culbertson	34	25	0.89	+0.17	Columbia Falls	3.13	Hamilton	0.07
Nebraska	23.1	+0.1	Kimball	73	14	Agate	27	28	0.35	-0.12	Auburn	2.29	Smithfield	0.00
Nevada	27.4	-0.1	Martins Ranch	71	14	Elko	22	20	0.53	-0.78	Lewis Rand	2.28	2 stations	0.00
New England*	15.0	-6.7	Woodstock, Vt.	55	27	Enosburg Falls, Vt.	44	19	3.76	-0.12	Rockport, Mass.	6.90	Block Island, R. I.	1.66
New Jersey	23.2	-6.8	River Vale	59	23	River Vale	34	5	3.09	-0.63	Dover	4.67	Tuckerton	1.34
New Mexico	31.9	-0.9	Carlsbad	77	18	Fruitland	9	28	0.17	-0.39	Clouderoft	0.85	2 stations	0.00
New York	15.0	-7.4	New York	55	23	Paul Smiths	46	19	3.48	+0.61	Adams Center	6.52	Harkness	1.48
North Carolina	36.0	-4.2	Fayetteville	73	22	Highlands, Hendersonville	8	30	2.95	-1.24	Highlands	6.07	Charlotte	1.38
North Dakota	3.6	-3.0	Oakdale	50	9	Milton	52	24	0.37	-0.14	Glen Ullin	1.10	2 stations	T.
Ohio	20.7	-7.1	Cambridge	70	22	Milligan	30	4	3.85	+1.30	Benton Ridge	7.23	Pomeroy	1.50
Oklahoma and Indian Territories	36.5	-0.9	Eldorado, Okla.	79	19	Arapaho, Okla.	5	26	1.50	+0.12	Claremore, Ind. T.	9.00	2 stations	T.
Oregon	37.0	+1.9	Gold Beach	73	30	Pine	11	20	5.27	-0.58	Glenora	21.20	Grass Valley	0.15
Pennsylvania	20.0	-7.3	Pittsburg, Uniontown	66	22	Lawrenceville	38	4	3.55	-0.32	Somerset	5.82	Greensboro	2.08
Porto Rico	73.3	Bayamon	95	24	Cidra	47	20	3.19		Cidra	9.31	Ponce	0.05
South Carolina	40.2	-4.5	Yemassee	74	21	Clemson College	8	52	2.97	-0.59	Summerville	4.78	Bennettsville	0.82
South Dakota	12.3	-2.5	Cavite	68	7	Darlington	8	6	2.97	-0.17	Silver City	1.60	2 stations	T.
Tennessee	36.1	-1.7	Newport	71	22	Kidder	39	24	0.29	-0.17	Trenton	5.05	Carthage	1.49
Texas	46.9	-1.1	Fort Ringgold	91	22	Bristol	3	30		-1.60	Sabine	3.29	15 stations	0.00
Utah	23.3	-3.5	Rockville	68	17	Erasmus	3	27	0.83	-0.08	Tooele	2.82	2 stations	0.00
Virginia	31.0	-4.4	Newport News	70	22	Menarville	1	29	0.71	-0.72	Standardville	4.27	Shenandoah	1.37
Washington	34.9	+3.2	Mottinger's Ranch	61	12	Plateau	23	26	3.99	-0.28	Clearwater	16.77	Ephrata	0.15
West Virginia	27.5	-4.3	Logan	72	29	Burkes Garden	14	30		-0.94	Pickens	5.82	Parkersburg	1.24
Wisconsin	8.1	-6.9	Williamson	72	23	Republie	10	20	2.72	-0.71	Beloit	1.83	Meadow Valley	0.08
Wyoming	20.1	+0.1	Prairie du Chien	47	9	New Cumberland	18	5	0.50	+0.03	Battle	8.30	2 stations	T.
			Pine Bluff	63	15	Minocqua	46	27	0.79					
						Osceola	46	25						
						Border	24	31						

* Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

tion of the State, and the drought in the northern portion was broken by the rainfall of the 20th and 21st. A cold wave overspread the State on the 3d and 4th and another on the 25th. Wheat, barley, rye, and fall oats were very backward in all sections as a result of the drought. These crops were improved in the northern portion by the rainfall of the latter part of the month. West of the Brazos River small grain was in very poor condition. Preparation of ground for spring crops was unusually well advanced. Truck in the coast region was somewhat damaged by low temperatures. Range feed was short, but stock were generally in fair condition.—*L. H. Murdoch.*

Utah.—Cold, stormy weather prevailed, except over the southern counties. Abundant snowfall over the northern portion of the State, with only a trace over the southern portion. The range afforded practically no feed. Stock were being fed and were thriving. Feed was reported scarce. Wheat was well protected and in excellent condition in the districts where most of the wheat is grown, but, owing to drought and scanty snow covering in the southern half of the State, the crop there was much less promising.—*R. J. Hyatt.*

Virginia.—Temperature and precipitation were below normal. During short periods in the second and last decades thawing injured late sown wheat, oats, and clover. A heavy snowfall in the last decade protected these crops during the coldest weather. In nearly all grain growing sections the winter wheat and oats, also rye and clover, were in a pre-

carious condition and it seemed certain that the acreage would be much reduced from this cause.—*Edward A. Evans.*

Washington.—The precipitation was ample and, as a rule, well distributed both as to time and locality. It should be beneficial to the staple crops of the ensuing season by storing up a supply of moisture in the soil. The temperature was remarkably uniform, and much milder than usual in the eastern counties of the eastern division. The weather was generally favorable for the growth and healthful condition of winter wheat. There was no injury from freezing.—*G. N. Salisbury.*

West Virginia.—The weather during the month was cold and dry. Rain caused general break-up on the 22d, and replenished water supply. Wheat, rye, oats, and grass in poor condition, not having had much snow protection over a large part of State. No plowing or other farm work done. Some corn remained to be husked. Roads in fine condition, and stock wintering well.—*E. C. Vose.*

Wisconsin.—The month was generally dry and cold. The most severe cold period lasted from the 24th to the 29th, the 25th giving an average temperature for the State of 18.2° below zero. Although the snowfall was light there was little melting, and winter grain and grasses were amply protected from the cold weather throughout the month. A large portion of the tobacco crop remained in the shed, as the weather was too dry to allow of handling the crop without waste.—*W. M. Wilson.*

Wyoming.—The weather for the month was mild and pleasant over nearly all sections of the State, and unusually favorable for the stock interests. All stock have kept in good condition, and practically no losses

have occurred. The deficient snowfall over most of the State gave some apprehension of a deficient supply of irrigation water for the coming season.—*W. S. Palmer.*

SPECIAL ARTICLES.

RECENT PAPERS BEARING ON METEOROLOGY.

Dr. W. F. R. PHILLIPS, Librarian, etc.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —.

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— Dispersion of Fogs by Electricity. P. 115.
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Spiess, Otto. Zur Flugfrage. Pp. 101-108.
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